Event Study On Declaration Of Separation On Stock Prices Of Hero MotoCorp Ltd. : A Case Study On Hero & Honda Separation

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INTRODUCTION[1]

Hero Honda was a motorcycle and scooter manufacturer based in India. Hero Honda started in 1984 as a joint venture between Hero Cycles of India and Honda of Japan. *"Hero"* is the brand name used by the Munjal brothers for their flagship company Hero Cycles Ltd. A joint venture between the Hero Group and Honda Motor Company was established in 1984 as the Hero Honda Motors Limited at Dharuhera, Haryana, India. During the 1980s, the company introduced motorcycles that were popular in India for their fuel economy and low cost. A popular advertising campaign based upon the slogan *'Fill it - Shut it - Forget it'* that emphasized the motorcycle's fuel efficiency helped the company grow at a double-digit pace since its inception. The technology in the bikes of Hero Honda, for almost 26 years (1984–2010), came from its Japanese counterpart, Honda. Hero Honda had three manufacturing facilities based at Dharuhera in Haryana ; Gurgaon in Haryana; and at Haridwar in Uttarakhand. These plants together were capable of churning out 3 million bikes per year. Hero Honda had a large sales and service network with over 3,000 dealerships and service points across India. Hero Honda had a customer loyalty program since 2000 called the Hero Honda Passport Program. The Company was the largest two wheeler manufacturer in India. The 2006 Forbes *'200 Most Respected Companies'* list had Hero Honda Motors ranked at the 108th position.

ABOUT HERO & HONDA'S SEPARATION

In late 2010, Hero and Honda announced plans to separate. The two companies described the dissolution of their 26-year marriage as *"equity realignment"* and confirmed that Hero Honda will be permitted to use Honda's name until 2014. It will also continue to receive new technology from the Japanese company in exchange for royalty payments. A joint press release by the companies said that *"the decision to restructure the equity had been reached in a very cordial and amicable manner."* Yet, the deal was shrouded in secrecy, and the price that Hero was paying to purchase Honda's shares was not disclosed. A month later, on January 24, 2011, the two partners signed a binding licensing agreement covering their existing products as well as any new products that they would launch in India. Hero was given the freedom to export its products and to develop its own research and development capabilities, privileges it had been denied under the joint venture. J. Sagar Associates advised Hero on the separation. It deployed a five-member team on the deal that included founding partner Jyoti Sagar and partner Venkatesh Prasad. Honda was represented by Khaitan & Co., with director Ketan Kothari assuming the role of lead adviser. The law firm counselled Honda on matters relating to the transaction documents, the compliance of conditions precedent, the Takeover Code, various exchange control issues and Foreign Direct Investment policy. Soichiro Uno, a partner at Tokyo-based law firm Nagashima Ohno & Tsunematsu, was Honda's Japanese counsel (Raghavendra Verma).

ABOUT HERO MOTOCORP[2] LTD.

In December 2010, the Board of Directors of the Hero Honda Group decided to terminate the joint venture between Hero Group of India and Honda of Japan in a phased manner. The Hero Group would buy out the 26% stake of Honda in JV Hero Honda. Under the joint venture, the Hero Group could not export to international markets (except Sri Lanka), and the termination would mean that the Hero Group could now export. Since the beginning, the Hero Group

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[1] Available at URL: http://www.india-server.com/bikes/hero-honda.html, accessed on September 10, 2011.
[2] Available at URL: http://bikeadvice.in/hero-honda/, accessed on September 11, 2011.

relied on their Japanese partner Honda for the technology in their bikes. So there have been concerns that the Hero Group might not be able to sustain the performance of the Joint Venture alone. Hero Moto Corp Ltd. can now export to Latin America, Africa and West Asia. Hero is free to use any vendors for its components instead of just the Honda-approved vendors.

OBJECTIVE OF THE STUDY

The present study aimed to conduct an event study on the Declaration of Separation on stock prices of Hero MotoCorp Ltd. The study aimed at exploring the implications of the separation for the shareholders. The event study methodology was used to estimate Cumulative Abnormal Returns (CAR) for a 90 day window period.

The Market Model Method (single- factor model) was used for the analysis. The study endeavored to find the Cumulative Abnormal Return (CAR) of Hero MotoCorp Ltd. The Market model assumes that all inter-relationships among the returns on individual assets arise from a common market factor that affects the return on all assets, i.e. the expected return on individual assets (Fama and Miller, 1969). The event study methodology was extensively used to assess the impact of an announcement of a particular strategy on the firm's stock prices. This analytical approach is well accepted and has been widely used in various disciplines such as finance, accounting, marketing, strategy, e-commerce and law. The methodology has also been applied to assess the impact of some marketing and advertising-related events such as brand extension announcements (Lane and Jacobson, 1995). The event study analysis assumes that all public information is incorporated into the stock prices immediately on announcement (Brown and Warner, 1980 and 1985; Pruitt and Peterson, 1986; Etebari, Horrigan and Landwehr, 1987; MacKinsley, 1997; and McWilliams and Siegel, 1997).

LITERATURE REVIEW

The Market model assumes that all interrelationships among returns on individual assets arise from a common market factor that affects the return on all assets (Fama et al., 1969). The event study methodology has been used to estimate cumulative average abnormal returns (CAR) in a 90 day window period (CAR) in a 1-day, 2- day, 5-day, 10-day, 15-day, 20-day, and 90-day window period. For the event study analysis in semi strong version of the efficient market hypothesis, it assumes that all publicly available information is incorporated into the stock prices immediately on announcement (Brown and Warner, 1980 and 1985; Pruitt and Peterson, 1986; Etebari, Horrigan and Landwehr, 1987; MacKinsley, 1997; and McWilliams and Siegel, 1997). The event study methodology has been extensively used to assess the impact of an announcement of a particular strategy on the firms' stock prices. This analytical approach is well accepted and has been used widely in various disciplines such as finance, accounting, marketing, strategy, e-commerce and law. The methodology has also been applied to assess the impact of some marketing and advertising relating events such as brand extension announcements (Lane and Jacobson, 1995). Many studies reveal the financial performance of mergers and acquisitions on stock returns around the merger announcement; a large set of papers have also examined long-run stock returns following acquisitions. By reviewing the literature, it has been concluded that long-run performance is negative following mergers, though performance is non-negative (and perhaps, even positive) following tender offers. Two explanations of under-performance (speed of price-adjustment and EPS myopia) are not supported by the data, while two other explanations (method of payment and performance extrapolation) receive greater support (Agrawal and Jaffe, 1999). A formal specification of an event study in terms of a system of abnormal returns, in particular, emphasizes the possible limitations of using a methodology when misspecification may be present. A major insight of the study is to emphasize the importance of conditionality, learning and convergence in the theory of event studies and in the evolution of abnormal returns (Sawyer and Gygax, 2001). Under the Bayesian framework, it is useful to update relevant information in a sequential learning mechanism, they use the Kalman filter to consider time dependent parameters, and they choose the initial distribution by using an information theory framework. The proposed extension leads to a more robust set-up in appraising the impact of economic and financial events on the market value of firms (Dubcosvky and Martinez, 2003). Potential rules for determining the length of an event window when looking at a limited number of observations found that rules based on continuing price movements yield window lengths that correlate with the *"size"* of the news, as measured by the magnitude of earnings surprises, while a rule based on abnormally high volume does not have this property (Krivin et al., 2003). A common method of conducting the event study is the least-squares regression with dummy variables.

Daily stock returns, however, are typically non-normally distributed, potentially rendering the hypothesis tests on the least squares coefficients invalid, if based on asymptotic critical values. Non-normality can lead to substantial departures from the asymptotic critical values and large asymmetries. Both under- and over-rejection of the null hypothesis are possible, depending on the particular form of the non-normality (Ford and Kline, 2006). Findings got a stronger support for positive impact on gains in firm value among non-IT firms than among IT firms. The smaller strategic alliance partners perform better than their larger partners. However, they failed to find any significant difference in impact on firm value between merger/acquisition and joint venture announcements (Yong et al., 2006 and Nagm and Kautz, 2008). The importance of the new methodology comes from the fact that many same industry mergers do not come alone and come from its ability to capture some material interactions between simultaneous mergers. The relationship between the mergers' marginal probabilities and the scenario probabilities and a non - linear regression model are at the core of Simultaneous Mergers Probability Event Study (SMPES) methodology. In the next step, the firms' diagnostic regressions reveal how and to what extent their abnormal returns depend on the scenario probability changes (Graca, 2006). In less efficient markets, that date is not sufficiently accurate to capture the entire market reaction because of the leakage of information. Using the rumours date instead, they found that in the sample, the overall market value creation can even change from negative to positive (Palmucci and Caruso, 2008). By examining the impact of quarterly earnings announcement on the stock price movement of the firm, using BSE sensex, daily return data was used to study the mean stock price effect. The effects of clustering of events had been accommodated to analyze the effect of the announcements. The study also examined the drifting up of share prices with reference to a good news announcement and vice versa (Das et al., 2008).

ANALYSIS OF THE STUDY

Event study methodology is designed to investigate the effect of an event on a specific dependent variable. A commonly used dependent variable in event studies is the stock price of the company. The definition of such an event study will be a study of the changes in stock price beyond expectation (Abnormal returns) over a period of time (event window). We attribute the abnormal returns to the effects of the event. The event study methodology seeks to determine whether there is an abnormal stock price effect associated with an event. From this, we can infer the significance of the event. The event study methodology has been extensively used to assess the impact of an announcement of a particular strategy on the firms' stock prices. This analytical approach is well accepted and has been used widely in various disciplines such as finance, accounting, marketing, strategy, e-commerce and law. The methodology has also been applied to assess the impact of some marketing and advertising relating events such as brand extension announcements (Lane and Jacobson, 1995). An event study is concerned with the impact of a particular firm-specific corporate event on the security prices of the company. For example, an event study might be conducted to determine the impact of merger announcements on stock prices. If event studies suggest that security prices rise when mergers are announced, then this might suggest that mergers benefit stock investors. Furthermore, if stock prices rise on merger announcement news, we might conclude that the stock market, based on the opinions of a huge number of investors, believes that mergers make companies more valuable. Event studies measure stock performance that reflects investor's opinions concerning the importance and benefit level of the event. Event studies have been performed on announcements of many types of corporate events such as dividends, earnings, takeovers, insider transactions, managerial changes, and so on. The stock market has been found to react to various corporate announcements - and mergers are one such significant announcement , which have a bearing on the stock price movement of the firm surrounding the announcement. The magnitude of abnormal returns provides a direct measure of unexpected change in security holders' wealth associated with the event (Kothari and Warner, 2004). The key assumption of the event study methodology is that the market must be efficient. Given an efficient market, the effects of the event will be reflected immediately in the stock prices of the company. This allows the researchers to observe the economic effect of the event over a relatively short period.

The procedure of an event study comprises of:

1) Identify the event in question.

2) Identify estimation, event and post-event windows.

3) Estimate parameters using data in the estimation window.

- Ri and σe from the constant mean model.
- αi, βi and σe from the market model.

4) Measure abnomal returns in the event window:
- From the constant mean model: ARit = Rit - Ri
- The market model: ARit = Rit- α^i- β^IRmt

5) Aggregate abnormal returns: $CARi(T1, T2) = \sum_{t=T1}^{T2} ARit$

This procedure has been applied on the Hero & Honda Separation event so as to study the impact of this event on the stock prices. The event study methodology has been used to estimate cumulative average abnormal returns (CAR) in a 90-day window period. The basis for the event study analysis assumes that all publicly available information is incorporated into the stock prices immediately on announcement (Brown and Warner, 1980 and 1985; Pruitt and Peterson, 1986; Etebari, Horrigan and Landwehr, 1987; MacKinsley, 1997; and McWilliams and Siegel, 1997).

THE STEPWISE DETAIL IS PRESENTED BELOW

Step – 1 : The researchers first decided upon the event they wished to investigate, and then collected the data of the company that had gone through such an event. The event in question in the present study is the Hero & Honda Separation. For this study, the data that the researchers used includes the announcement date (e.g. first announcement date of acquisition) and the stock prices of Hero Honda before and after the event (i.e. -290 to +90 days) i.e. from 02/03/2010 to 16/03/2011.

Separation Announcement Date was 16/12/2010 - Corporate Announcement: New Delhi, December 16, 2010: Hero Honda Motors Ltd. (HHML) — the world's single largest two-wheeler manufacturer — signed a new licensing arrangement with Honda Motor Co., Japan, enabling higher growth by giving it the freedom to develop its own R&D capabilities and exploit global export and manufacturing opportunities. The respective Boards of Honda Motor Co., Japan and HHML on this date approved the new licensing arrangement separately in Tokyo and New Delhi. The Hero Group of India and Honda Motors Co.; Japan agreed to restructure their respective equity positions in Hero Honda - as a part of which, Hero Group will buy the entire of Honda's stake in Hero Honda. It will be business-as- usual, for the time being, at Hero Honda, arid there will be no change in ground operations in the immediate future. The two companies also put in place processes and means of support to ensure a gradual and smooth transition.

Step - 2 : The next step in the procedure is to identify the window period, i.e. an estimation window, event window and post event window. The researchers needed to decide on a period over which the security prices of the firm involved in this event were to be examined. This event window for the present study is : t (-90) to t (90).

(Estimation window) -90		(Event Window)	+90 (Post Event Window)	
T0	T1	0	T2	T3
		T		

Window Period And Clean Data Period : The event window had been taken from -90 days to the date of the announcement to 90 days. The estimation window had been taken as 200 days before the 90 days window period. The share price data and market index data, namely of Hero MotoCorp Ltd. and Auto Index were taken from the official website of the Bombay Stock Exchange Limited (http://www.bseindia.com). Corporate Announcements during t (-90) to t (90) have been presented in the Table 1. The dates mentioned below were excluded while conducting the event study to know the impact of separation on stock prices of Hero Honda , because the data on these dates was influenced by the announcement other than the event of separation.

Dates : 24/09/2010; 01/11/2010; 22/11/2010; 25/01/2011; 02/02/2011; 09/03/2011; 10/03/2011

Step 3 : Next, the researchers made an estimation of the important parameters that will give them the expected returns during the event period. The researchers used the market model to find the expected returns. For this purpose; they needed the alpha (y-intercept) and beta (slope) of the prices over a reasonably long estimation window (i.e. -200 to -90 days). Using the simple regression model in SPSS, the values of alpha and beta were calculated. The estimated Beta value is 0.696 and the alpha value is 0.000895.

Step 4: Using these estimates, the expected returns (Rjt) for the Hero Moto Corp Bank were calculated w.r.t Auto Index. The market model has been used for this purpose i.e.

$$Rj = \alpha j + \beta j Rmt + \varepsilon jt$$

Where Rmt is the return on the market index (Auto index) for day t, β measures the sensitivity of firm j to the market, this is a measure of risk, αj measures the mean return over the period not explained by the market, and εjt is a statistical error term with E(ejt)= 0. The regression produces estimates of αj and β; call these α^j, β^j. The predicted return for a firm for a day in the event period is the return given by the market model on that day using these estimates, that is:

$$\hat{R}jt = \hat{\alpha}j + \hat{\beta}j\, Rmt$$

While using the market model for Hero MotoCorp Ltd. :

$$\text{Alpha } (\hat{\alpha}j) = 0.000895$$

$$\text{Beta } (\hat{\beta}j) = 0.696$$

$$\hat{R}jt = 0.000895 + 0.696 \text{ (Return on market Auto Index)} + 0$$

Where,

εjt is a statistical error term with E (ejt) = 0

After that, the researchers deducted the expected return from the actual return **(Rj- R^jt)** to get the abnormal return on each day in the event window.

As explained above, to estimate the abnormal returns, (or prediction error or PE),

$$PEjt = Rj - (\hat{\alpha} + \hat{\beta}j\, Rmt)$$

Step 5: After calculating abnormal return, the researchers calculated the standard deviation of abnormal return :

$$\text{Standard deviation} = \sqrt{\text{Var (PEjt)}}$$

Value calculated for standard deviation of abnormal returns for Hero Moto Corp = 0.01803

PEjt is the prediction error from the estimated market model, and VAR (PEjt) is the variance of the prediction error. Next step was to calculate the T statistic.

T statistic is calculated as:

$$T = \frac{PEjt}{\sqrt{\text{Var (PEjt)}}}$$

The cumulative abnormal return for the event window is calculated as shown below:

$$CAR(-T \text{ to } +T) = \sum_{-T}^{+T} ARt$$

The researchers then added up the abnormal return over the entire period of time to get the Cumulative Abnormal Return (CAR). *Cumulative Abnormal Return for Hero Moto Corp is -5.148145196* i.e. stockholders lost about 5% abnormal returns because of the separation event, as shown in the Table 4.

RESULTS AND DISCUSSION

Using the single-factor model, this study finds that the average Cumulative Abnormal Return (CAR) of Hero MotoCorp Ltd. is negative. Results reveal that the separation announcement between Hero & Honda generated a Negative Abnormal Return, i.e. CAR of -5.20 percent. Thus, the shareholders of Hero MotoCorp Ltd. got significant negative abnormal returns.

The event study methodology is widely used in corporate finance because the researchers are interested to know how

corporate policies can impact the value of a firm, e.g. the effect of separation on share prices of a company. On the surface, this might be a daunting task. However, using the event study methodology for the present study, the researchers were able to find the economic effect, as long as they made sure that they could remove any confounding effects on the return due to other events. To get a representative event study, the researchers chose a reasonably large sample and chose an appropriate event period. The usefulness of such a study in corporate finance comes from the fact that, given rationality in the marketplace, the effects of an event will be reflected immediately in security prices. Thus, a measure of the event's economic impact can be constructed using security prices observed over a relatively short time period. In contrast, direct productivity-related measures may require many months or even years of observation. The event findings are very clear and easy to interpret and share. The researchers are of the view that factors such as investor's sentiment, management considerations, etc. need not be looked at. The researchers assumed that all these are reflected in the stock price and return immediately due to the efficient market hypothesis. Therefore, they only have to look at the effect on one single item, the returns. This is the case in corporate finance research, whereby, the research

Table 1 : Corporate Announcement For The Event Window (-90 to +90 days)

Date	Events
24/09/2010	Hero Honda Motors Limited submitted to the Exchange, a copy of the proceedings of the Annual General Meeting of the Company held in September.
01/11/2010	Hero Honda Motors Limited submitted to the Exchange, the Standalone Financial Results for the period ended September.
22/11/2010	Hero Honda Motors Ltd. informed BSE that the auditor's had conducted the limited review of the unaudited financial results for the quarter ended September.
25/01/2011	Hero Honda Motors Ltd. informed BSE that the Board of Directors of the Company has, vide Resolution passed by circulation on January 15, 2011, re-appointed Mr. Toshiaki Nakagawa as Jt. Managing Director of the Company for a period of 6 (Six) months.
02/02/2011	Hero Honda Motors Ltd. announced the following Unaudited results for the quarter ended December 31, 2010.The Company posted a net profit of ₹ 4290.00 million for the quarter ended December 31, 2010, as compared to ₹ 5357.70 million for the quarter ended December 31, 2009.
09/03/2011	Hero Honda Motors Limited submitted to the Exchange, a copy of Disclosure under Regulation 8A(4) of SEBI (Substantial Acquisition of Shares & Takeovers) Regulations, 1997.
10/03/2011	Axis Trustee Services Ltd. submitted the disclosure under Regulation 7(1) of SEBI (Substantial Acquisition of Shares & Takeovers) Regulations, 1997 to BSE.

Table 2 : Alpha (α^j) and Beta (β^j) Estimates For Hero Honda In Relation To Auto Index

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.000895	.001		-.739	.461
	Auto Index	.696	.093	.425	7.455	.000

a. Dependent Variable: Hero Honda

Table 3 : Standard Deviation of Abnormal Returns (PEjt)

Descriptive Statistics

	N	Mean	Std. Deviation
VAR00001	117	.0001	.01803
Valid N (list wise)	117		

Table 4 : Event Study- Cumulative Abnormal Returns For Hero & Honda Separation								
Date	Auto Index closing	Hero Honda closing	Rm	Rj	Rjt	PEjt	S.D (PEjt)	T
			X	Y	R^jt = α^j+ β^j Rmt	Rj-Rjt	Standard Deviation Abnormal Return	T statistic
			Actual Return Auto index	Actual Return Hero Honda	Expected Return	Abnormal Return		
15-Sep-10	9256.3	1738.5						
16-Sep-10	9215.03	1736.3	-0.004458585	-0.001265459	1.42407E-05	-0.004472826	0.01803	-0.248076855
17-Sep-10	9275.97	1750.45	0.006613109	0.008149513	0.006567061	4.6048E-05	0.01803	0.002553963
20-Sep-10	9397.32	1819.8	0.01308219	0.039618384	0.028469395	-0.015387205	0.01803	-0.853422372
21-Sep-10	9407.4	1807.3	0.001072646	-0.006868887	-0.003885745	0.004958391	0.01803	0.275007841
22-Sep-10	9414.92	1809.2	0.000799371	0.001051292	0.001626699	-0.000827329	0.01803	-0.045886218
23-Sep-10	9419.07	1795.95	0.00044079	-0.007323679	-0.004202281	0.00464307	0.01803	0.257519151
27-Sep-10	9553.88	1857.65	0.014312453	0.034355077	0.024806133	-0.01049368	0.01803	-0.582012204
28-Sep-10	9568.97	1855.35	0.001579463	-0.001238123	3.32661E-05	0.001546197	0.01803	0.0857569
29-Sep-10	9576.73	1861.75	0.000810955	0.003449484	0.003295841	-0.002484886	0.01803	-0.137819536
30-Sep-10	9527.64	1851.9	-0.005125967	-0.005290721	-0.002787342	-0.002338625	0.01803	-0.129707427
01-Oct-10	9756.96	1843.85	0.024068919	-0.004346887	-0.002130433	0.026199353	0.01803	1.453097771
04-Oct-10	9818.75	1809.75	0.006332915	-0.018493912	-0.011976763	0.018309678	0.01803	1.015511817
05-Oct-10	9891.5	1799.55	0.007409293	-0.005636138	-0.003027752	0.010437045	0.01803	0.57887106
06-Oct-10	9934.37	1819.95	0.004334024	0.011336167	0.008784972	-0.004450948	0.01803	-0.246863468
07-Oct-10	9828.91	1841.45	-0.010615671	0.011813511	0.009117204	-0.019732875	0.01803	-1.094446731
08-Oct-10	9700.87	1833.75	-0.013026877	-0.004181487	-0.002015315	-0.011011562	0.01803	-0.610735529
11-Oct-10	9887.79	1870.8	0.019268375	0.020204499	0.014957331	0.004311044	0.01803	0.239103916
12-Oct-10	9878.25	1873.95	-0.000964826	0.001683772	0.002066905	-0.003031731	0.01803	-0.168149273
13-Oct-10	10015.87	1878.15	0.013931617	0.002241255	0.002454914	0.011476704	0.01803	0.636533771
14-Oct-10	9950.89	1861.7	-0.006487704	-0.008758619	-0.005200999	-0.001286705	0.01803	-0.071364686
15-Oct-10	9751.91	1802.4	-0.019996201	-0.031852608	-0.021274415	0.001278214	0.01803	0.070893716
18-Oct-10	9738.12	1808.35	-0.001414082	0.003301154	0.003192603	-0.004606685	0.01803	-0.255501118
19-Oct-10	9765.58	1836	0.002819846	0.015290182	0.011536966	-0.00871712	0.01803	-0.483478664
20-Oct-10	9710.97	1836.7	-0.00559209	0.000381264	0.001160359	-0.006752449	0.01803	-0.374511883
21-Oct-10	9807.17	1851.7	0.009906322	0.008166821	0.006579107	0.003327215	0.01803	0.184537719
22-Oct-10	9729.48	1855.1	-0.007921755	0.001836151	0.002172961	-0.010094716	0.01803	-0.559884415
25-Oct-10	9849.28	1863	0.012313094	0.004258531	0.003858937	0.008454157	0.01803	0.468893875
26-Oct-10	9933.73	1863.5	0.008574231	0.000268384	0.001081795	0.007492435	0.01803	0.415553817
27-Oct-10	9916.83	1860.3	-0.001701274	-0.001717199	-0.00030017	-0.001401104	0.01803	-0.077709593
28-Oct-10	9941.91	1901.25	0.002529034	0.022012579	0.016215755	-0.013686721	0.01803	-0.759108194
29-Oct-10	9909.91	1865.8	-0.003218697	-0.018645628	-0.012082357	0.00886366	0.01803	0.491606189
02-Nov-10	9952.29	1852.25	0.004276527	-0.0072623	-0.004159561	0.008436088	0.01803	0.467891752
03-Nov-10	10072.4	1865.15	0.012068579	0.006964503	0.005742294	0.006326285	0.01803	0.350875505
04-Nov-10	10241.05	1840.45	0.016743775	-0.013242903	-0.00832206	0.025065835	0.01803	1.39022936
05-Nov-10	10329.96	1854.85	0.008681727	0.007824173	0.006340625	0.002341102	0.01803	0.129844829
08-Nov-10	10290.75	1829.85	-0.003795755	-0.013478179	-0.008485812	0.004690057	0.01803	0.260125192

09-Nov-10	10300.88	1826.3	0.000984379	-0.00194005	-0.000455275	0.001439654	0.01803	0.079847687
10-Nov-10	10416.29	1810.9	0.011203897	-0.00843235	-0.004973915	0.016177812	0.01803	0.897271904
11-Nov-10	10336.57	1811.25	-0.007653397	0.000193274	0.001029519	-0.008682915	0.01803	-0.481581558
12-Nov-10	10125.81	1816.55	-0.020389742	0.002926156	0.002931605	-0.023321347	0.01803	-1.293474598
15-Nov-10	10209.8	1835.95	0.008294645	0.010679585	0.008327991	-3.3346E-05	0.01803	-0.001849475
16-Nov-10	9983.56	1813.75	-0.022159102	-0.012091833	-0.007520915	-0.014638187	0.01803	-0.811879455
18-Nov-10	10122.87	1912.85	0.01395394	0.054638181	0.038923174	-0.024969233	0.01803	-1.384871514
19-Nov-10	9940.93	1945.7	-0.017973164	0.017173328	0.012847636	-0.0308208	0.01803	-1.709417629
23-Nov-10	10110.95	1953.05	0.017103028	0.003777561	0.003524182	0.013578845	0.01803	0.753125085
24-Nov-10	10116.46	1933.2	0.000544954	-0.01016359	-0.006178859	0.006723813	0.01803	0.372923604
25-Nov-10	10056.09	1948.8	-0.005967502	0.008069522	0.006511387	-0.01247889	0.01803	-0.692118126
26-Nov-10	9866.48	1936.4	-0.018855241	-0.00636289	-0.003533571	-0.01532167	0.01803	-0.84978755
29-Nov-10	9963.3	1947.4	0.009813023	0.005680644	0.004848729	0.004964295	0.01803	0.27533527
30-Nov-10	10099.95	1973.4	0.013715335	0.013351135	0.01018739	0.003527945	0.01803	0.19567085
01-Dec-10	10291.92	1928.4	0.019007025	-0.022803284	-0.014976085	0.03398311	0.01803	1.884809219
02-Dec-10	10261.33	1788.25	-0.002972235	-0.072676831	-0.049688074	0.04671584	0.01803	2.591006074
03-Dec-10	10291.94	1832.45	0.002983044	0.024716902	0.018097964	-0.01511492	0.01803	-0.838320559
06-Dec-10	10325.48	1773.85	0.003258861	-0.031979044	-0.021362415	0.024621276	0.01803	1.365572698
07-Dec-10	10333.42	1787.4	0.000768972	0.007638752	0.006211571	-0.0054426	0.01803	-0.301863549
08-Dec-10	10236.29	1758.4	-0.009399599	-0.016224684	-0.01039738	0.000997781	0.01803	0.055340067
09-Dec-10	9895	1751.35	-0.033341181	-0.004009327	-0.001895491	-0.03144569	0.01803	-1.744075977
10-Dec-10	9921.76	1783.95	0.002704396	0.018614212	0.013850491	-0.011146095	0.01803	-0.618197189
13-Dec-10	9981.48	1772.25	0.006019093	-0.00655848	-0.003669702	0.009688795	0.01803	0.537370788
14-Dec-10	9961.45	1713.85	-0.002006716	-0.032952462	-0.022039913	0.020033197	0.01803	1.111103539
15-Dec-10	9873.78	1621.3	-0.008800928	-0.054001225	-0.036689853	0.027888925	0.01803	1.546806724
16-Dec-10	9890.72	1679.1	0.001715655	0.035650404	0.025707681	-0.023992026	0.01803	-1.330672556
20-Dec-10	10118.62	1981.2	0.023041801	0.179917813	0.126117798	-0.103075997	0.01803	-5.716916091
21-Dec-10	10168.38	1966	0.004917667	-0.007672118	-0.004444794	0.009362461	0.01803	0.519271254
22-Dec-10	10153.36	1941.2	-0.001477128	-0.012614446	-0.007884654	0.006407526	0.01803	0.355381365
23-Dec-10	10069.36	1921.4	-0.008273123	-0.010199876	-0.006204114	-0.002069009	0.01803	-0.114753712
24-Dec-10	10017.28	1929.45	-0.005172126	0.004189653	0.003810999	-0.008983125	0.01803	-0.498232107
27-Dec-10	10007.14	1934.85	-0.001012251	0.002798725	0.002842913	-0.003855163	0.01803	-0.213819381
28-Dec-10	9971.74	1941	-0.003537474	0.003178541	0.003107265	-0.006644739	0.01803	-0.368537923
29-Dec-10	10054.29	1955.15	0.008278395	0.007290057	0.005968879	0.002309515	0.01803	0.128092917
30-Dec-10	10140.9	1991.9	0.008614233	0.018796512	0.013977372	-0.005363139	0.01803	-0.297456399
31-Dec-10	10235.41	1986.1	0.009319686	-0.002911793	-0.001131608	0.010451293	0.01803	0.579661308
03-Jan-11	10218.25	1985.25	-0.001676533	-0.000427974	0.00059713	-0.002273663	0.01803	-0.126104412
04-Jan-11	10162.24	1975.2	-0.005481369	-0.005062335	-0.002628385	-0.002852984	0.01803	-0.158235394
05-Jan-11	9964.24	1904.05	-0.019483893	-0.036021669	-0.024176081	0.004692188	0.01803	0.260243377
06-Jan-11	9806.13	1886.3	-0.015867743	-0.009322234	-0.005593275	-0.010274468	0.01803	-0.569854024
07-Jan-11	9486.47	1873.55	-0.032597977	-0.006759264	-0.003809448	-0.028788529	0.01803	-1.59670156
10-Jan-11	9283.75	1804.6	-0.021369382	-0.036801793	-0.024719048	0.003349666	0.01803	0.185782936
11-Jan-11	9318.54	1837.35	0.003747408	0.018148066	0.013526054	-0.009778646	0.01803	-0.54235418
12-Jan-11	9506.57	1872.7	0.020178054	0.019239666	0.014285807	0.005892246	0.01803	0.326802342
13-Jan-11	9478.15	1830.5	-0.002989511	-0.022534309	-0.014788879	0.011799367	0.01803	0.654429696

14-Jan-11	9259.02	1818.9	-0.023119491	-0.006337066	-0.003515598	-0.019603892	0.01803	-1.08729298
17-Jan-11	9251.64	1791.85	-0.000797061	-0.014871626	-0.009455651	0.008658591	0.01803	0.48023244
18-Jan-11	9292.24	1788.75	0.004388411	-0.001730056	-0.000309119	0.00469753	0.01803	0.260539644
19-Jan-11	9301.54	1762.65	0.001000835	-0.014591195	-0.009260472	0.010261307	0.01803	0.56912406
20-Jan-11	9298.58	1772.2	-0.000318227	0.005417979	0.004665913	-0.00498414	0.01803	-0.276435939
21-Jan-11	9309.41	1756	0.001164694	-0.00914118	-0.005467262	0.006631956	0.01803	0.367828927
24-Jan-11	9387.88	1750.15	0.008429106	-0.003331435	-0.001423679	0.009852784	0.01803	0.546466135
27-Jan-11	9168.31	1724.05	-0.023388667	-0.014913007	-0.009484453	-0.013904214	0.01803	-0.771171043
28-Jan-11	8841.9	1657.45	-0.035601981	-0.03862997	-0.025991459	-0.009610522	0.01803	-0.533029504
31-Jan-11	8894.58	1630.5	0.005957995	-0.016259917	-0.010421902	0.016379898	0.01803	0.908480195
01-Feb-11	8643.23	1607.75	-0.028258782	-0.013952775	-0.008816132	-0.019442651	0.01803	-1.078350014
03-Feb-11	8755.25	1565.5	0.012960433	-0.026278961	-0.017395157	0.03035559	0.01803	1.683615622
04-Feb-11	8571.46	1534.9	-0.020991976	-0.019546471	-0.012709344	-0.008282633	0.01803	-0.45938062
07-Feb-11	8581.57	1577.15	0.001179496	0.027526223	0.020053251	-0.018873756	0.01803	-1.04679732
08-Feb-11	8350.09	1513.15	-0.026974085	-0.040579526	-0.02734835	0.000374265	0.01803	0.020757914
09-Feb-11	8154.12	1439.65	-0.023469208	-0.048574166	-0.03291262	0.009443412	0.01803	0.523761051
10-Feb-11	8278.97	1452.15	0.015311278	0.008682666	0.006938135	0.008373143	0.01803	0.464400596
11-Feb-11	8490.82	1472.4	0.025588932	0.01394484	0.010600609	0.014988323	0.01803	0.831299114
14-Feb-11	8812.73	1528.25	0.03791271	0.037931269	0.027295163	0.010617547	0.01803	0.588882276
15-Feb-11	8875.58	1515.85	0.007131729	-0.008113856	-0.004752244	0.011883972	0.01803	0.659122149
16-Feb-11	8842.59	1494.45	-0.00371694	-0.014117492	-0.008930774	0.005213834	0.01803	0.289175492
17-Feb-11	8930.76	1498.45	0.009971061	0.00267657	0.002757893	0.007213168	0.01803	0.40006477
18-Feb-11	8717.71	1463.65	-0.023855752	-0.023223998	-0.015268903	-0.00858685	0.01803	-0.476253454
21-Feb-11	8614.9	1439.35	-0.011793235	-0.01660233	-0.010660222	-0.001133013	0.01803	-0.062840441
22-Feb-11	8448.72	1391.05	-0.019289835	-0.033556814	-0.022460542	0.003170707	0.01803	0.175857314
23-Feb-11	8488.18	1466.85	0.00467053	0.054491212	0.038820883	-0.034150353	0.01803	-1.894085044
24-Feb-11	8189.39	1490.45	-0.035200714	0.016088898	0.012092873	-0.047293587	0.01803	-2.623049773
25-Feb-11	8251.04	1500.35	0.007528033	0.006642289	0.005518033	0.00201	0.01803	0.11148086
28-Feb-11	8252.92	1464.95	0.00022785	-0.023594495	-0.015526768	0.015754618	0.01803	0.87380024
01-Mar-11	8718.22	1492.6	0.056380045	0.018874364	0.014031558	0.042348487	0.01803	2.348779108
03-Mar-11	8880.28	1502.15	0.018588657	0.006398231	0.005348169	0.013240488	0.01803	0.734358729
07-Mar-11	8691.98	1529.9	-0.021204286	0.018473521	0.013752571	-0.034956857	0.01803	-1.93881626
08-Mar-11	8791.63	1518.15	0.011464591	-0.007680241	-0.004450447	0.015915039	0.01803	0.882697666
11-Mar-11	8767.53	1532.05	-0.002741244	0.009155881	0.007267493	-0.010008736	0.01803	-0.555115724
14-Mar-11	8828.14	1531.15	0.006913007	-0.000587448	0.000486136	0.006426871	0.01803	0.356454319
15-Mar-11	8648.95	1520.75	-0.020297594	-0.00679228	-0.003832427	-0.016465167	0.01803	-0.913209469
Cumulative Abnormal Return (CAR) -5.148145								**-5.148145196**

might be done to investigate a very sophisticated effect of an event, but their data have to be easy enough, so that even the common investor on the street will be able to understand their publication. Due to the afore- mentioned reasons , researchers often choose to use the event study methodology to examine the direction, magnitude and speed of price reactions to the various phenomenon in corporate finance.

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